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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/623,952	12/21/2000	Boaz Porat	A33475 PCTUS	2025
21003	7590	12/24/2003	EXAMINER AHN, SAM K	
BAKER & BOTTS 30 ROCKEFELLER PLAZA NEW YORK, NY 10112			ART UNIT 2634	
			PAPER NUMBER	

DATE MAILED: 12/24/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/623,952

Applicant(s)

PORAT ET AL.

Examiner

Sam K. Ahn

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Claim Objections

3. Claims 2-4 and 6-10 are objected to because of the following informalities:

Claim 2, line 4, delete "a second slave xDSL modem" and insert "the second slave xDSL modem".

Claim 2, line 6, delete "wiring" and insert "transmission medium".

Claims 7 and 9, line 1, respectively, the Office suggests:

delete "blind timing recovery" and insert "blind mode timing recovery".

Claims 3-4, 6, 8-10 directly or indirectly depend on claim 2.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. Claims merely recite used without any active, positive steps delimiting how these use are actually practiced. Without reciting practice, positive steps, claim 1 do not achieve the purpose of a method, wherein claims 2-10 directly or indirectly depend on claim 1.

Furthermore, note that it is not necessary to re-claim elements already recited in a dependent claim. In lines 18-20 of Claim 2, which is depending on claim 1, recites the two discrete-time sequences, which is also recited in claim 1, lines 6-7.

- b. Claim 1 recites the limitation "the slave modem", "the symbol rate" in lines 3 and 4, respectively.

Claim 2 recites the limitation "the desired data", "the slave receiver", "the received signal", "the sampled data", "the master clock timing recovery", "the lower and upper band edge components", "the spectral line vector", "the

digital control word", and "the symbol state data decisions" in lines 8, 10, 11, 12, 15, 17, 22, 34 and 41, respectively.

Claims 10 and 12, lines 4 and 3, respectively, recites the limitation "the double precision control signal".

Claim 12 recites the limitation "the transmitted symbols", "the slave receiver", "the received signal", "the sampled data", "the master modem", "the master clock timing recovery", "the lower and upper band edge components", "the spectral line vector" in lines 4, 6, 7, 8, 10, 11, 14 and 19.

There is insufficient antecedent basis for this limitation in the claim, wherein claims 3-9, 13 and 14 directly or indirectly depend on claim 1 or 12.

- c. Claim 2, lines 6 and 8-9, recites "said slave modem" and "the slave modem", respectively, wherein it is unclear as to which modem is being referred to since a slave modem is recited in claim 1, line 3, and a second slave modem is recited in claim 2, line 3.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furukawa et al. ('095).

Regarding claim 1, Furukawa teaches (see Fig.6) sampling received data at a symbol rate and converting to digital form (64) filtered with a filter (66) wherein sampled data is split into In-phase and Quadrature channels (note col.14, lines 10-25), and the I and Q are sampled again and mixed with two discrete-time sequences (note col.14, lines 26-62). Although Furukawa discloses a well-known Nyquist rate, Furukawa does not teach wherein the sequences are sampled again at twice the symbol rate. It would have been obvious to one skilled in the art at the time of invention to provide data from the carrier table generator (60) at twice the symbol rate for the purpose of meeting the Nyquist theory and compute data more accurately with a reasonable amount of sampled data.

Regarding claim 5, Furukawa teaches all subject matter claimed, as applied to claim 5. Moreover, it would have been obvious to one skilled in the art at the time of invention to increase the sampling rate to be more than twice the symbol rate for the purpose of exceeding the Nyquist theory of providing twice the symbol rate, however, one would sacrifice from computing excessive amount of data, which in some cases may be unnecessary. On the other hand, when a fast processor is provided where a certain amount of data computation has no

downside, one skilled in the art may decide to design a system sampling at more than twice the symbol rate for a more accurate computation.

Allowable Subject Matter

6. Claims 2-4 and 6-10 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, and claim objection, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
7. Claims 12-14 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.
8. The following is a statement of reasons for the indication of allowable subject matter:
Present application discloses a method and apparatus for fast timing recovery of received signal wherein the received signals are sampled at twice the sampling rate and further steps to compute the error signal in order to adjust the vco of the receiver. Closest prior art, Furukawa discloses, in the same field of endeavor, receiving QAM signal and recovering the signal received. However, Furukawa does not teach or suggest the teaching of combination of all the steps involved as recited in the claims to compute the error signal.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hayashi teaches computation of error signal using values of a cosine and sine sequences.

Takatori et al. teach timing recovery of received signal.

Becker et al. teach sampling of received signal.

Patel and Limberg teach computation of carrier error of a received QAM signal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Sam Ahn** whose telephone number is **(703) 305-0754**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Stephen Chin**, can be reached at **(703) 305-4714**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

P.O. Box 1450

Alexandria, VA 22313-1450

or faxed to:

(703) 872-9306

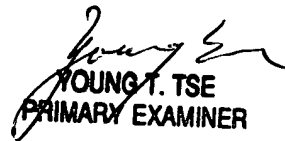
Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Sam K. Ahn
12/13/03


YOUNG T. TSE
PRIMARY EXAMINER